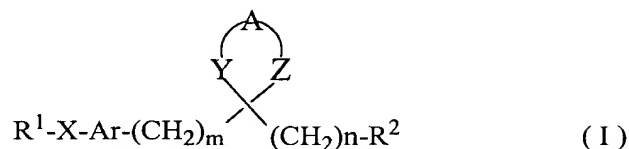


IN THE CLAIMS

Please amend the claims as follows:

Claims 1-37 (Canceled).

Claim 38 (New): A compound of the formula:



wherein R<sup>1</sup> is phenyl, optionally substituted by a group selected from the group consisting of the following (C1) to (C31):

- (C1) halogen,
- (C2) lower alkyl,
- (C3) lower alkoxy,
- (C4) halo(lower)alkyl,
- (C5) halo(lower)alkoxy,
- (C6) lower alkenyl,
- (C7) lower alkylcarbamoyl, carbamoyl, phenyl(lower)alkylcarbamoyl, lower alkanoyl,
- (C8) lower alkylthio, lower alkylsulfinyl, lower alkylsulfonyl,
- (C9) phenyl, naphthyl,
- (C10) halophenyl,
- (C11) hydroxy,
- (C12) mono- or dihydroxy(lower)alkyl, phenoxycarbonyloxy(lower)alkyl
- (C13) amino,

- (C14) carboxy,
- (C15) lower alkylendioxy,
- (C16) lower alkanoylamino,
  - phenyl(lower)alkanoylamino, halophenyl(lower)alkanoylamino,
  - lower alkoxy(lower)alkanoylamino,
  - phenoxy(lower)alkanoylamino, lower alkoxyphenoxy(lower)alkanoylamino,
  - lower alkylphenoxy(lower)alkanoylamino,
  - halophenoxy(lower)alkanoylamino,
  - carboxy(lower)alkanoylamino, lower alkoxy carbonyl(lower)alkanoylamino,
  - lower alkyl carbamoyl(lower)alkanoylamino,
  - halo(lower)alkanoylamino,
  - lower alkenyl(lower)alkanoylamino,
  - lower alkoxy(lower)alkanoylamino,
  - phenyl(lower)alkoxy(lower)alkanoylamino,
  - piperidinyloxy(lower)alkanoylamino, N-lower alkoxy carbonyl piperidinyloxy-(lower)alkanoylamino, pyridyloxy(lower)alkanoylamino,
  - hydroxy(lower)alkanoylamino,
  - lower alkanoyloxy(lower)alkanoylamino,
  - lower alkyl carbamoyloxy(lower)alkanoylamino, N,N-di(lower alkyl)carbamoyloxy,
  - piperidino-carbonyloxy(lower)alkanoylamino,
  - phenyl(lower)alkyl carbamoyloxy(lower)alkanoylamino, lower alkoxy carbonylamino(lower)alkanoylamino,
  - amino(lower)alkanoylamino, fluorenylmethoxycarbonylamino(lower)-alkanoylamino,

lower alkylamino(lower)alkanoylamino, [N,N-di(lower alkyl)amino](lower)alkanoylamino, [N-lower alkyl-N-(lower alkoxy carbonyl)-amino](lower)alkanoylamino, [N-lower alkyl-N-(fluorenylmethoxycarbonyl)amino](lower) alkanoylamino, [N-lower alkyl-N-(mono- or di(lower)-alkylcarbamoyl)amino](lower)alkanoylamino, [N-(mono- or di(lower alkyl)carbamoyl)amino](lower)alkanoylamino, benzoylamino(lower)alkanoylamino, lower alkanoylamino(lower)alkanoylamino, lower alkanesulfonylamino(lower)alkanoylamino, lower alkoxy(lower)alkanoylamino(lower)alkanoylamino, cyclo(lower)alkyloxycarbonylamino-(lower)alkanoylamino, pyridylcarbonylamino(lower)alkanoylamino, morpholinocarbonylamino(lower)alkanoylamino, phenyl(lower)alkoxyoxycarbonylamino(lower)alkanoylamino, lower alkoxyphenylsulfonylamino(lower)alkanoylamino, hydroxy(lower)alkylamino(lower)alkanoylamino, morpholino(lower)alkanoylamino, oxooxazolidinyl(lower)alkanoylamino, oxopyrrolidinyl(lower)alkanoylamino, trimethylhydantoinyl(lower)alkanoylamino, lower alkenylamino(lower)alkanoylamino, lower alkoxy(lower)alkylamino(lower)alkanoylamino, phenyl(lower)alkylamino(lower)alkanoylamino, pyridyl(lower)alkylamino(lower)alkanoylamino, lower alkoxy carbonylamino, phenyl(lower)alkoxy carbonylamino,

lower alkoxy(lower)alkoxycarbonylamino,  
halo(lower)alkoxycarbonylamino,  
amino(lower)alkoxycarbonylamino, phthalimido(lower)alkoxycarbonylamino,  
carbamoylamino,  
(mono- or di(lower alkyl)carbamoylamino,  
naphthylcarbamoylamino,  
halophenylcarbamoylamino,  
lower alkoxyphenylcarbamoylamino,  
lower alkenylcarbamoylamino,  
cyclo(lower)alkyl(lower)alkylcarbamoylamino,  
phenyl(lower)alkylcarbamoylamino,  
halo(lower)alkylcarbamoylamino,  
lower alkoxy(lower)alkylcarbamoylamino,  
hydroxy(lower)alkylcarbamoylamino, (lower  
alkyl)(diphenyl)silyloxy(lower)alkylcarbamoylamino,  
carboxy(lower)alkylcarbamoylamino, lower  
alkoxycarbonyl(lower)alkylcarbamoylamino,  
lower alkylcarbamoyl(lower)alkylcarbamoylamino,  
pyridylcarbamoylamino,  
lower alkylsulfonylamino,  
lower alkenoylamino,  
lower cycloalkanecarbonylamino,  
lower alkenyloxycarbonylamino,  
phenoxycarbonylamino,  
lower alkylthiocarbonylamino,

- (C17) phenyl(lower)alkoxy,
- (C18) lower alkenyl, mono- or di(lower alkyl)carbamoyl(lower)alkenyl, (2-(methylcarbamoyl)ethenyl, 2-(ethylcarbamoyl)ethenyl, 2-(propylcarbamoyl)ethenyl, 2-(isopropylcarbamoyl)ethenyl, 2-(dimethylcarbamoyl)ethenyl,) phenylcarbamoyl(lower)alkenyl, lower alkoxycarbamoyl(lower)alkenyl, halophenylcarbamoyl(lower)alkenyl,
- (C19) lower alkylaminocarbonyloxy,
- (C20) lower alkanoyloxy,
- (C21) lower alkoxy(lower)alkanoyloxy,
- (C22) lower alkoxycarbonyloxy,
- (C23) pyridyl(lower)alkenoyloxy
- (C24) lower cycloalkanecarbonyloxy,
- (C25) carboxy(lower)alkoxy, lower alkoxycarbonyl(lower)alkoxy, lower alkanoyl(lower)alkoxy, lower cycloalkanecarbamoyl(lower)alkoxy, lower alkylcarbamoyl(lower)alkoxy,
- (C26) lower alkylcarbamoyloxy(lower)alkyl,
- (C27) lower alkoxycarbonylamino(lower)alkyl,
- (C28) amino(lower)alkyl,
- (C29) lower alkylcarbamoyl(lower)alkyl,

(C30) furylcarbonylamino, teretahydroisoquinolylcarbonylamino, N-lower  
alkoxycarbonyl-teretahydroisoquinolylcarbonylamino,  
pyrrolidinylcarbonylamino, and

(C31) oxazolyl, lower alkyloxadiazolyl,

R<sup>2</sup> is carboxy or hydroxyaminocarbonyl,

Ar is thienyl,

A is trimethylene,

X is a single bond,

Y is thia, sulfinyl or sulfonyl,

Z is methylene,

m and n are each an integer of 0 to 6, and

$$1 \leq m+n \leq 6,$$

and salts thereof.

Claim 39 (New): The compound of Claim 38, wherein R<sup>2</sup> is carboxyl.

Claim 40 (New): The compound of Claim 38, wherein R<sup>2</sup> is hydroxyaminocarbonyl.

Claim 41 (New): The compound of Claim 38, wherein Y is thia.

Claim 42 (New): The compound of Claim 38, wherein Y is sulfinyl.

Claim 43 (New): The compound of Claim 38, wherein Y is sulfonyl.

Claim 44 (New): The compound of Claim 38, wherein R<sup>1</sup> is substituted phenyl.

Claim 45 (New): The compound of Claim 44, wherein R<sup>1</sup> is phenyl substituted by a group selected from (C1), (C2), (C3), (C4), (C5), (C6), (C7), (C8), (C9), and (C10).

Claim 46 (New): The compound of Claim 44, wherein R<sup>1</sup> is phenyl substituted by a group selected from (C11), (C12), (C13), (C14), (C15), (C16), (C17), (C18), (C19), and (C20).

Claim 47 (New): The compound of Claim 44, wherein R<sup>1</sup> is phenyl substituted by a group selected from (C21), (C22), (C23), (C24), (C25), (C26), (C27), (C28), (C29), (C30), and (C31).

Claim 48 (New): A pharmaceutical composition which comprises the compound of Claim 38 or a pharmaceutically acceptable salt thereof; and a pharmaceutically acceptable carrier or excipient.

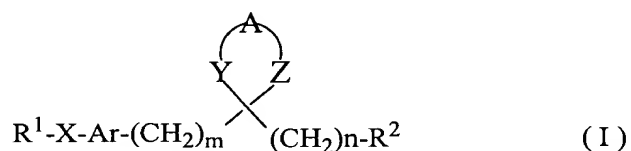
Claim 49 (New): A process for preparing a pharmaceutical composition which comprises mixing the compound of Claim 38 or a pharmaceutically acceptable salt thereof with a pharmaceutically acceptable carrier or excipient.

Claim 50 (New): A method for treating matrix metalloproteinases (MMP) or tumor necrosis factor  $\alpha$  (TNF  $\alpha$ )-mediated disease, the method comprising administering to a patient in need thereof, a therapeutically effective amount of the compound of Claim 38 or a pharmaceutically acceptable salt thereof, wherein the matrix metalloproteinases (MMP) or tumor necrosis factor  $\alpha$  (TNF  $\alpha$ )-mediated disease is selected from the group consisting of arthritis, cerebral disease, tissue ulceration, abnormal wound healing, periodontal disease,

bone disease, tumor metastasis, tumor invasion, HIV-infection, autoimmune disease, and sepsis.

Claim 51 (New): The method of Claim 50, wherein the matrix metalloproteinases (MMP) or tumor necrosis factor  $\alpha$  (TNF  $\alpha$ )-mediated disease is arthritis.

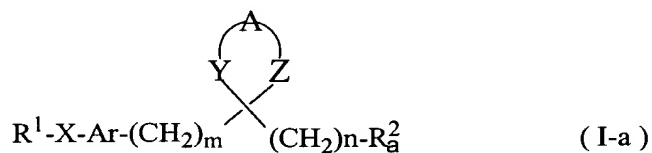
Claim 52 (New): A process for the preparation of a compound of the formula:



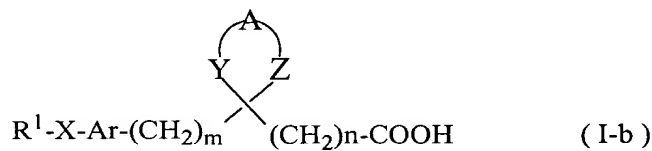
in which  $\text{R}^1$ ,  $\text{R}^2$ , Ar, A, X, Y, Z, m and n are each as defined in Claim 38,

which comprises

(1) subjecting a compound of the formula:



or a salt thereof to removal reaction of the carboxy-protective group, to give a compound of the formula:



or a salt thereof.